

# **Generative Adversarial Networks and Its Applications in Biomedical Informatics**

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## **Abstract**

The basic Generative Adversarial Networks (GAN) model is composed of the input vector, generator, and discriminator. Among them, the generator and discriminator are implicit function expressions, usually implemented by deep neural networks. GAN can learn the generative model of any data distribution through adversarial methods with excellent performance. It has been widely applied to different areas since it was proposed in 2014. In this review, we introduced the origin, specific working principle, and development history of GAN, various applications of GAN in digital image processing, Cycle-GAN, and its application in medical imaging analysis, as well as the latest applications of GAN in medical informatics and bioinformatics.